

REMARKS

In this Response, claims 1 – 7, 9 – 10, and 18 – 22 have been amended, and claim 30 has been canceled without prejudice. Support for these amendments is found throughout the originally filed application. No new matter has been added.

Claims 1 – 11 and 18 – 24 are pending.

Drawing Objections

In the Office Action the drawings are objected to for not showing a bus, a memory, a circuit, a processor, a network router, a wireless mobile phone, and a personal digital assistant. While these elements are shown in FIG. 7, the Examiner has stated that FIG. 7 was not an elected embodiment.

The election that took place was an election between species that were identified by the Examiner as being patentably distinct from one another. An election of one species is naturally a non-election of the other species. However, the election of one species does not tender a non-election of other matter discussed in the application.

FIG. 7 was never identified as a species, much less one that “patentably distinct” from the species represented in FIGs. 1 – 3. Therefore, the previous election of species represented in FIGs. 1 – 3 does not preclude the Applicant from claiming matter disclosed with respect to FIG. 7.

The relationship of FIG. 7 to the elected “species” is closer to a combination/subcombination relationship. See paragraph [0035]: “Figure 7 illustrates a block diagram of an electronic system **300** of one embodiment incorporating at least one MEMS switch **302**, similar to MEMS switch **100** illustrated in **Figures 1 – 6**.” There was never a restriction with respect to this relationship.

The Applicant respectfully requests that the Examiner withdraw these objections for these reasons.

Claim Rejections – 35 USC § 103

Claims 1, 4 – 7, 18, and 20 – 22 are rejected under 35 USC § 103(a) as being unpatentable over Ma (US 6,529,093) (hereinafter “Ma”) in view of Martin et al. (US 6,376,787) (hereinafter “Martin”); claims 1, 4 – 7, 18, and 20 – 22 are rejected under 35

USC § 103(a) as being unpatentable over Urano et al. (US 2004/0063325) (hereinafter “Urano”); claims 1 and 8 are rejected under 35 USC § 103(a) as being unpatentable over Shirakawa (US 6,115,231) (hereinafter “Shirakawa”) in view of Martin; claims 1 and 8 -10 are rejected under 35 USC § 103(a) as being unpatentable over Wong (US 2004/0031670) (hereinafter “Wong”) in view of Martin; claim 2 is rejected under 35 USC § 103(a) as being unpatentable over Ma in view of Martin and further in view of Tourino et al. (US 6,809,412) (hereinafter “Tourino”); and claims 3 and 19 are rejected under 35 USC § 103(a) as being unpatentable over Ma in view of Martin and further in view of Wyse et al. (US 6,663,424) (hereinafter “Wyse”).

Claim 1, as amended, recites an electromechanical switching having:

- a signal contact;
- an actuation electrode;
- a beam to electrically couple to the signal contact through a conductive path between the beam and the signal contact that occurs at a time when an actuating voltage is applied to the actuation electrode and the beam engages the signal contact; and
- a coating to at least facilitate the existence of an arc reduction environment.

The electromechanical switch described in the present application is a switch which electrically couples two exposed electrodes, i.e., the beam and the signal contact, together through a conductive path that occurs when the electrodes engage each other. Claim 1 has been amended to more clearly recite that the electrical coupling occurs through this conductive path. This amendment is supported throughout the originally filed application. See, for example, discussion regarding contact between the beam and the signal contact (e.g., paragraph [0004]); the beam engaging the signal contact (e.g., paragraphs [003], [0021], and claim 18 as originally filed); and current flowing through the signal electrode pair (beam and the signal contact) (e.g., paragraph [0027] and FIG. 4).

While electrically coupling the beam to the signal contact in such a manner presents various efficiencies, it also has the associated arcing challenges described in the background section of the specification. As discussed in that section, a charged

environment may lead to arcing between exposed electrodes thereby shortening the life of the switch.

The inventor of the subject matter of the present application developed the inventive concept of providing a coating that would allow for the electrical coupling of the electrodes through the conductive path, yet contribute to the existence of an arc reduction environment. In one embodiment it does this by having a relatively low coefficient of secondary electron emission, as compared to the electrode which it covers. In another embodiment, it does this by being a hydride which, when heated releases hydrogen that increases the pressure of the environment. An increase in pressure may result in a decrease in arcing. The coating may have these arc reduction properties (e.g., secondary electron emission properties and/or hydride properties) along with conductive properties that allow the switch to operate in the manner described.

In contrast to the switch described and claimed in the present application, the cited references Ma, Martin, Shirakawa, and Wong describe capacitive MEMS switches. That is, the switch is turned on or off based on the high or low capacitive states. In a capacitive MEMS switch, a dielectric layer prevents the existence of a conductive path between the beam and signal electrode when the former engages the latter.

While Tourino does disclose a switch utilizing direct electrical contact, there is nothing to teach, suggest, or imply modification of Tourino to use a coating to at least facilitate the existence of an arc reduction environment (while maintaining the direct electrical contact characteristics).

For at least these reasons these references, alone or in combination, cannot be said to make obvious claim 1.

Claims 2 – 11 and 18 – 24 depend from, or include limitations similar to, claim 1. These claims also add additional points of patentability such as, but not limited to,

- a conductive coating;
- a conductive coating having a relatively low coefficient of secondary electron emission;
- a coating comprising a conductive hydride; and

- a conductive coating consisting of titanium or a titanium alloy.

For at least these reasons, these claims are also patentable. Therefore, the Applicant respectfully requests that the Examiner withdraw the rejections of these claims.

CONCLUSION

For these reasons, the applicant respectfully requests allowance of pending Claims 1-10 and 18-24.

If Examiner has any questions, he is invited to contact the undersigned at (503) 796-2972.

The Commissioner is hereby authorized to charge shortages or credit overpayments to deposition account No. 500393.

Respectfully submitted,
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